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DEPARTMENT OF BIOLOGICAL SYSTEMS ENGINEERING NEWSLETTER, OCTOBER 2013

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BIOLOGICAL SYSTEMS ENGINEERING D E P A R T M E N T

NEWSLETTER OF ACHIEVEMENT OCTOBER 2013

BSE Faculty Members Receive Omtvedt Innovation Award

Dr. Dean Eisenhauer, Dr. Suat Irmak, Dr. Derrel Martin, and Dr. Ron Yoder were presented the Omtvedt Innovation Award by NU Vice President **Ronnie Green**, IANR Harlan Vice Chancellor, at the Institute for Agriculture and Natural Resources All-Hands meeting, Sept. 6. The award recognized their exceptional service for leadership and significant contributions to the initial development of partnerships and programs in the University of Nebraska's Robert Daugherty Water for Food Institute at UNL.



Fabulous Four from left: Dr. Derrel Martin, Dr. Suat Irmak, Dr. Ron Yoder, Dr. Dean Eisenhauer, with NU Vice President Ronnie Green, IANR Harlan Vice Chancellor.

The Omtvedt Innovation Award was made possible through the generosity of Lee Harlan and her late husband, Neal, in honor of Dr. Irv Omtvedt and his distinguished career at the University. Dr. Omtvedt served in numerous roles at IANR, including head of animal science, dean of the Agricultural Research Division and vice chancellor of IANR.

The Robert Daugherty Water for Food Institute is a University of Nebraska research, education, and policy analysis institute committed to helping the world efficiently use its limited freshwater resources, with particular focus on ensuring the food supply for current and future generations. It was established in April 2010 with a \$50 million founding gift from the Robert B. Daugherty Charitable Foundation.

Dean Eisenhauer chairs the BSE Graduate Committee and has been on the faculty since Dec., 1975. He teaches undergraduate and graduate courses in hydrology and irrigation. His current research interests include: hydrologic impacts of land and water use practices in agricultural regions, infiltration and overland flow, water flow in the intermediate vadose zone, and water flow measurement systems for irrigation. With support from the Daugherty Water for Food Institute (DWFI), Eisenhauer played a leadership role in developing the Master of Science Double Degree program now offered by UNL and the UNESCO-IHE Institute for Water Education in Delft, The Netherlands. Dean chaired the search committee for the Water for Food Cluster Hire, which led to hiring five new IANR faculty members with expertise in water.

Suat Irmak, H.W. Eberhard Distinguished Professor, research, Extension, and educational programs evolve around application of engineering and scientific fundamentals in soil and water resources, irrigation, crop water productivity, evapotranspiration and other surface energy fluxes for various agro-ecosystems; and impacts of changes in climate variables

on water resources and agro-ecosystem productivity; plant physiology and environmental biophysics. He provided leadership in the development of UNL's South Central Agricultural Laboratory irrigation engineering and water management research facilities, which are regarded as one of the premier research

facilities in the U.S. for center pivot, subsurface-drip irrigation, surface irrigation, evapotranspiration, crop water productivity, and plant interactions with the environment. He has established large-scale networks such as Nebraska Water and Energy Flux Measurement, Modeling and Research Network (NEBFLUX: <http://bse.unl.edu/web/bse/sirmak2>) and Nebraska Agricultural Water Management Network (<http://water.unl.edu/web/cropswater/nawmdn>) to research, develop, and disseminate innovations related to enhancing water productivity of agro-ecosystems and implementing newer tools and technologies in the area of water resources engineering to conserve water and reduce energy consumption. Suat has authored and co-authored more than 100 refereed journal articles, 3 book chapters, 30 scientific/technical papers in professional conference proceedings, 21 peer-reviewed extension publications, and more than 20 regional popular magazine articles. He has authored over 300 technical presentations, including 30 invited talks.

Derrel L. Martin, BSE Professor, specializes in irrigation and water resource engineering. He has been on the faculty since 1982. His research interests include irrigation engineering, evapotranspiration, water resources management, groundwater quality, and decision support systems. His teaching interests are primarily focused on irrigation and drainage engineering, while his extension efforts focus on managing limited irrigation water supplies, improved energy use efficiency in irrigation and designing and managing center pivot irrigation systems for optimal efficiency. He is an ASABE Fellow and has served as chair of the Soil and Water Division. Martin consulted for Nebraska on two U.S. Supreme Court cases and has assisted the Natural Resources Dept. on several projects.

Ron Yoder, former BSE Department Chair, is the current Associate Vice Chancellor for IANR. Yoder has more than 30 years in water management, with extensive field research and projects in Brazil, Zambia, and China. He is associate director for agricultural water management in IANR. His research and teaching interests also include measurement and estimation of evapotranspiration, water and solute movement in the vadose zone and land use impacts on water quality.



UNIVERSITY OF NEBRASKA-LINCOLN

BIOLOGICAL SYSTEMS ENGINEERING DEPARTMENT

From the Department Head



Mark Riley

As we begin the fall semester, it is a good time to reflect on the past year in the Biological Systems Engineering Department. My family and I have been here since October of 2012 and have greatly enjoyed the support and friendship we have received in Nebraska. It has been a wonderful move for us, and we appreciate all that the state and its people have to offer.

The BSE Department is doing very well and continues to grow. Our student numbers last year reached 360 in total, and all signs are that we continue to increase at a sizable rate. The early numbers suggest that our freshmen class could be the largest ever. The BSE faculty and staff place a large emphasis on student advising, and we do a really good job of helping the students find their way. We are proud of our reputation of BSE being very student centered.

The BSE Department has been an active participant in IANR's recent hiring initiative and has been able to bring in two new faculty, with two or more upcoming. Dr. Santosh Pitla, currently a post doctoral researcher at Ohio State, after receiving his Ph.D. from University of Kentucky, will be joining us Oct. 1, 2013. His expertise is in agricultural machinery and autonomous equipment. Dr. Jenny Melander, previously in an extension role in BSE, will step into a tenure track extension specialist position as part of the Science Literacy initiative. Her role will be to perform discipline based education research, to reach out to K-12 students, and to connect these activities with ongoing teaching at UNL. We are very pleased to have them both on our faculty. Recently our offer was accepted for a position in Advanced Sensing Technologies for Plant Stress by Dr. Yufeng Ge from TAMU. He is joining us in January 2014. We are still in the process of searching for one more position in Water Resources (to meet the irrigation research and extension needs in Scottsbluff). The search is progressing well, and we should have that position filled soon.

Faculty research and extension programs are doing quite well, with new funding for a variety of projects including greenhouse growth of strawberries (Meyer); imaging of bone growth (Othman); precision agriculture (Luck); water resource education (Irmak); and nanostructured films (Pannier). Certainly, BSE is very diverse.

We recently lost two dear friends of the Department. Smitty (Darold Smith) lost his battle with cancer on Aug. 9, 2013. Smitty served as the treasurer for the Friends of the Larsen Tractor Test and Power Museum. Former BSE Professor Norman Teter passed away at age 94. In the BSE history, he wrote, "My slot was extension and research in rural electrification with teaching when needed. Bill Splinter handed me a ball peen hammer and said that I might have to get some other tools to get a decent shop wired and stocked in the Quonset hut on the Agricultural Engineering research farm located east of Lincoln."

Ending on a higher note, Lance Todd (Larsen Museum manager) and his wife celebrated the birth of their daughter Riley Claire on Aug. 7th, and Rodney Rohrer (NTTL engineer) and his wife celebrated the birth of their son Benjamin Nelson on Aug. 25th.

I hope that you have a healthy and productive year. Stop by and visit the Department when you have a chance.

Best regards,

Mark Riley
BSE Department Head
mriley3@unl.edu



Nebraska Winter Strawberries Instrumentation and Sensors

A Collaborative Project of UNL Biological Systems Engineering, and Agronomy and Horticulture Departments

Dr. George Meyer is part of an interdisciplinary team that will be providing sensors and instrumentation for a project to monitor the performance of the CapMat II™ fertigation system for growing strawberries in plastic Quonset greenhouses in Nebraska over winter months. The project is supported by USDA Multistate 1035, Nebraska Department of Agriculture, and the Walmart Foundation. To learn more about this project:

<http://agronomy.unl.edu/cea>

<http://agronomy.unl.edu/web/agronomy/cea-grant>



The Nebraska Strawberry Team: Back row (left to right) Associate Professor Stacy Adams, greenhouse expert; Ryan Pekarek, Pekarek's Produce; Dr. Vicki Schlegel, nutraceuticals expert; Dr. Paul Read, fruit scientist; Associate Professor Dave Lambe, project MBA. Front row (left to right) Dr. George Meyer, Biological Systems Engineer; Dr. Ellen Paparozzi, Principle Investigator and team leader; Katie Pekarek, Pekarek's Produce; Dr. Erin Blankenship, statistician; and Liz Conley, research technologist.

Biological Systems Engineering Department Newsletter

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Any mention of trade names in this publication does not imply endorsement by
Biological Systems Engineering Department or the University of Nebraska.

Archives

Past issues are on the web at bse.unl.edu/news

Livestock & Manure Pathogen Research

Amy Millmier Schmidt (BSE) and Ty Schmidt (AnSci) received an equipment grant of \$75,000 to purchase a photonic imaging system. The system uses a specialized camera to capture light emitted from bacteria that have been transformed with luminescent plasmids allowing sensitive detection of bacterial colonies and providing a way to visually illustrate and define the movement and survivability of pathogenic bacteria in real-time. Their proposed research will focus on identifying methods for controlling pathogenic bacteria persistence within livestock, reducing pathogen shedding due to environmental and mechanical stressors in livestock, and mitigating losses of manure-borne pathogenic bacteria to the environment.

In line with “At Work for Nebraska: A Strategic Plan for the University of Nebraska IANR 2008–2016,” the project will explore innovative solutions to improving food safety and environmental quality by applying this novel pathogen detection method to integrated biological systems, providing an opportunity to address food safety from a multi-disciplinary approach by integrating research on pathogen shedding from livestock with environmental mobility of pathogens. Positive impacts on environmental quality and food safety—both for animal by-products and for agricultural crops receiving applications of manure—are the ultimate goal of this research.

Stormwater Gold

The UNL Stormwater Management Education Team received the 2013 Outstanding Team Gold Award from the Association of Natural Resources Extension Professionals (ANREP) for stormwater management programming. This national award “recognizes achievements of interdisciplinary, interagency teams that exhibit leadership and excellence in planning, designing, delivering, and evaluating an Extension natural resources program.” Team members recognized in the nomination include: **David Shelton, Kelly Feehan, Tom Franti, Steve Rodie, Katie Pekarek, and Bobbi Holm.**

The NIFA grant that has supported much of their work across Nebraska has been extended for one more year, and will be used in concert with other grants, programs, and numerous working relationships that have been developed through the team efforts. The team is looking forward to making even greater impact in stormwater management programming.

National Science Foundation Award: Pannier to Develop Gene Delivery Tool



Angela Pannier, BSE assistant professor, recently earned a five-year, \$419,051 Faculty Early Career Development Program Award from the National Science Foundation to continue her research. These prestigious CAREER awards support junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent teaching, and the integration of education and research.

Employing DNA that codes for genes to correct genetic problems, treat disease or aid healing, holds tremendous potential, but finding an effective, safe method of delivering genes to cells remains a significant hurdle. Pannier is using nanotechnology to develop a gene delivery tool that could unleash the power of gene therapy. 3-D nanostructured surfaces, using the spaces between nano-sized columns to hold large amounts of DNA, similar to a toothbrush loaded with toothpaste, touched to the cell unloads the DNA.

“We hypothesize that if you put a cell down on a nanostructured surface that’s just loaded with DNA, you are providing the cells more opportunity to take up the genetic material,” Pannier said. “We also think that if, at the same time, you are making an optimal environment for the cells, they’ll take up even more DNA. The combination of that is incredibly novel and has huge potential.” This gene delivery method could provide a longer-term therapeutic solution than drugs and is safer than methods that use viruses, she explained. The nanostructure surfaces also could be used in biotechnology research and in sensors to help detect molecules in the environment, such as toxic gases or microbial contaminants.

Pannier, a member of the University’s Center for Nanohybrid Functional Materials, is collaborating with UNL electrical engineers and center members Mathias Schubert and Eva Franke-Schubert to fabricate and study the nanostructured surfaces.

With her CAREER award, Pannier also is developing courses to enhance UNL’s biomedical engineering curriculum by emphasizing learning through primary literature and hands-on laboratory exercises. She also will provide research experiences for high school and undergraduate students, and design outreach workshops and curriculums for high school classroom use.

Pannier received ARD equipment funds to purchase a zetasizer instrument for measuring nanoparticle size and charge, which will be used in the NSF CAREER project. She is also part of a team awarded an equipment grant from the National Science Foundation.

BIOLOGICAL SYSTEMS ENGINEERING

HALL OF FAME

2012

Patrick J. Lee

In 1981, Patrick Lee joined Gates Rubber Company in Denver, Colorado as a Product Application Engineer. He held a variety of posts in application engineering, including application specialist for the Automotive OE and Industrial Hydraulic markets. He was the Applications Manager from 1984 until 1989.

In 1989, he was named Manager of Hydraulic Marketing. Hydraulic sales and profitability achieved unprecedented growth. Several of the current products, marketing programs and disciplines developed under his leadership remain fundamental to today's business success.

Patrick became Director of Worldwide Business Development in 1997. He was instrumental in creating and implementing strategy in the newly formed Worldwide Hose and Connector division. He was directly responsible for activities relating to mergers and acquisitions on a global basis. Of note was the fact that he served as the chief negotiator in forming a joint venture with a Chinese state owned enterprise.

From 2000-2007, Pat served as Vice President, Industrial Sales and Marketing. He was responsible for Gates Industrial Sales and Marketing in the U.S. and Canadian markets, serving the Industrial OEM and distribution markets.

Pat has served as President of Gates Corporation Fluid Power, North America since 2008. He is responsible for all operations within North America, including Sales, Marketing, Finance and Manufacturing for the United States, Canada and Mexico. Sales revenues exceed \$500 million annually.

Pat is a past Board member of the National Association of Hose Distribution (NAHAD), has acted as Chairman of the Bobcat Supplier Council and is currently serving on the Board of Directors for National Fluid Power Association (NFPA). As part of the NFPA Board, he represents Gates and the overall industry in collaboration with the Center for Compact and Efficient Fluid Power (CCEFP), a National Science Foundation funded organization, comprised of seven universities and industry partners that provide fundamental



fluid power research, education and product advancements.

In addition to a degree in Agricultural Engineering from the University of Nebraska-Lincoln, Pat earned a Masters degree in Business Administration-Finance and Accounting from Regis University in Denver. One of his most memorable UNL accomplishments was being part of the *Successful Farmer* funded study on the accuracy of farmers' calibration and application rates of pesticides and herbicides. He was a student assistant/field technician under the direction of Drs. Elbert Dickey and Allen Rider. *Successful Farming* published

a variety of articles over the years regarding "The Billion Dollar Blunder." Pat's message to engineering students has been to get involved beyond the core curriculum. Drs. Rider and Dickey truly provided a sound example of professional leadership and commitment to the agricultural industry.

Pat grew up in western Nebraska (Perkins County) by Elsie (population 120) and graduated from Wheatland High School (class of 20 students). Pat, his wife, Debra, and their two sons, Garrett and Alec, live in Littleton, Colorado. Garrett is enrolled at UNL and began classes in fall of 2012. Pat's two brothers and two sisters also attended UNL.

Pat Lee is, without a doubt, a credit to the profession of Agricultural Engineering and to the Biological Systems Engineering Department.

Gates Corporation, a 100-year company with revenues of \$3.4 billion, is the largest non-tire rubber manufacturer of industrial and automotive products, systems and components in the world. Gates operates 44 manufacturing plants around the world and maintains sales and marketing operations in every major automotive and industrial market, including North and South America, Europe, Asia, Australia, and the Gulf Region. Significant customers serviced by Gates Fluid Power North America include: John Deere, Bobcat, JLG, CNH, AGCO, Caterpillar, Vermeer, and Freightliner.

BIOLOGICAL SYSTEMS ENGINEERING

HALL OF FAME

★

2013

John Miller

John Miller's relationship with Agricultural and Biological Systems Engineering began in 1968 when he switched his major from Mechanized Agriculture to Agricultural Engineering. Following graduation from the University of Nebraska-Lincoln in 1972, John became a petroleum engineer with Amoco and worked for a year and a half in the Riverton/Lander, Wyoming area. In 1973 John and his wife, Pat, moved back to his uncle's farm in the Murdock, Nebraska area to the farmstead that is now the home of Oxbow Animal Health.

The Miller farm was a traditional grain, hay, and livestock operation during John's early years of agriculture. John's interest in marketing and adding "value added worth" to his products led him to start the Oxbow Hay Company in 1980. In the late 1980's, John's passion for marketing and thinking outside of the box led him to research the pet market and evaluate the feasibility of marketing his premium alfalfa hay to this group. Following several years of market research and business planning, John decided the time and opportunity were right to make a change.

Oxbow Pet Products was officially launched in 1992 when the company's inaugural product, Alfalfa Nibbles, was introduced to the pet marketplace. The early use of the internet allowed for effective marketing/advertising and "business to customer" sales. The use of ink jet color printers facilitated the quick creation and packaging of a product line that grew quickly. Oxbow was soon first to market, with 12 products specifically designed to provide premium nutrition to the small herbivore market. The growing number of veterinarians treating small animals at the time embraced the premium nutrition provided by Oxbow and not available elsewhere. These veterinarians were instrumental in helping the Oxbow brand gain placement throughout the United States and in many parts of the world.



Oxbow's "first to market" products facilitated Oxbow's rapid growth—helping transform the company from a "mom and pop" business in the mid 90's to what is today, a global leader in small animal nutrition with markets in 35 countries. In 2006, Oxbow Animal Health was named the SBA National Exporter of the Year. Pat and John were invited to Washington, D.C. to receive their award and meet President George W. Bush.

Oxbow is perceived as the premium brand of food, forage and care products for a rapidly growing small pet market. Oxbow products regularly win industry awards and accolades for both innovation and superior nutritional

content. Leading pet food retailer, PetSmart, recently made the decision to feature Oxbow as the "in store" diet in all 1,200 locations worldwide.

John and Pat Miller are both active in their community and Nebraska. John was a member of LEAD 4 and has remained active in the LEAD Alumni Association, serving a term as president. He was president of the local school board for nine years. He is a past board member and past president of the Nebraska Alfalfa Marketing Association. John has been president of numerous church organizations in the Lincoln Diocese. He and Pat are currently the campaign chairpersons for a \$25 million campaign for building a new St. Thomas Aquinas church and a new Newman Center here at UNL. He is on the board for Ag Builders of Nebraska, the advisory council for the UNL Food Processing Center, and the advisory council for the Engler Agricultural Entrepreneurship Program.

John has clearly shown that dreams can be achieved. He encourages young and aspiring entrepreneurs to not fear failure and to dream big.

**Visit the Biological Systems Engineering Hall of Fame
at Chase Hall on the East Campus of The University of Nebraska-Lincoln**

Food-Safety Startup



UNL faculty members **Jeyam Subbiah** (right) and **Harshavardhan Thippareddi** (left) have teamed with a local entrepreneur to create a new startup company: Presage Analytics. Working through NUtech Ventures—a non-profit, University affiliate that develops partnerships between researchers and

industry professionals—the two paired with a local entrepreneur to form Presage Analytics. The new startup will use a software prototype developed by Thippareddi and Subbiah to track microbial contaminants in food processing plants and prevent widespread outbreaks.

The project started after Thippareddi, a professor in Food Science and Technology, and Subbiah, an associate professor of Biological Systems Engineering, realized that the tracking of microbial data over time was the missing link in food safety programs. To close that gap, the researchers created software that tracks and analyzes environmental and product-testing data already collected by food processors.

NUtech Ventures helped match the software prototype with ISoft Data Systems, a local company with expertise in inventory management, production management software, and custom website design.

Food safety regulations mandate that companies in the food industry search for the presence of contaminants on a daily basis. The Presage software archives the food safety data collected and its location in the processing plant. By monitoring trends and data over time, Presage believes plants will be better equipped to isolate and contain future outbreaks.

“The software provides the food industry a means to connect the dots in case of a food safety issue through trend analysis to manage and prevent future food safety issues such as recalls and foodborne illness outbreaks, which can be devastating for the industry,” Subbiah said.

Finding a partner to develop the software was key to the company’s development. “NUtech has been excellent in finding the right local partner,” Subbiah said. “We understand food safety issues and have the market domain knowledge, while ISoft has the capability to develop commercial-grade software and can provide prompt services to food industry customers.”

Matthew Wegener, president and chief executive officer of ISoft, saw an opportunity to use his company’s inventory software framework and apply it to a new industry. “We see huge potential to get this product into the market quickly and to truly improve food safety internationally,” Wegener said. “By using the software framework already developed by ISoft and using Thippareddi’s and Subbiah’s expertise, we have the best of both worlds. This has been a great partnership.”

Wegener will serve as president of Presage Analytics. Thippareddi and Subbiah will serve as advisers and on the board of directors. Anthony Merrit and Dillon Sadofsky, current ISoft employees, also serve on the board of directors. Sadofsky, a software engineer, takes a major role in developing Presage Analytics. For more details: <http://go.unl.edu/rw5>

Building Collaborations with Chinese Universities

by Joe Luck



Curt Weller



From left: Joe Luck, Bill Kranz, and Chuck Hibberd, Dean of Cooperative Extension.

In May, 2013, three faculty members from BSE traveled to China, with IANR Harlan Vice Chancellor Ronnie Green and other IANR faculty, to meet with researchers from Xi’an Jiaotong Technical University (XJTU) in Xi’an and Northwest A&F University (NWAUFU) in Yangling. **Dr. Curt Weller**, **Dr. Bill Kranz**, and **Dr. Joe Luck** represented BSE as well as the Department of Food Science and Research and the Extension Center faculty during their visits with research teams from the Chinese universities.

During the three day visit to XJTU in Xi’an, discussions among the faculty focused on potential collaborations that may be further developed to support current initiatives in the Office of Research and Economic Development at UNL. Vice Chancellor Prem Paul attended the research team meetings along with XJTU Vice President Song and discussed the commitment and support for developing successful collaborations. UNL faculty presented information related to their research programs and highlighted research efforts from others at UNL with similar interests. Faculty from XJTU spoke about their research programs and gave tours of their laboratory facilities located on the campus. Brief presentations were made by faculty teams at the conclusion of the meeting to communicate potential collaborations that may be beneficial in the near future.

The IANR research group then traveled to Yangling to meet with faculty members from NWAUFU. During the day-long meeting, overviews of research programs within IANR and NWAUFU were presented to all attendees. UNL researchers then attended break-out sessions to present current research activities within their programs to the research teams from NWAUFU. Presentations by NWAUFU researchers highlighted current research and extension activities being conducted in the Shaanxi province by their teams.

The IANR team was treated to a cultural tour of the Xi’an area on the final day of the trip, which included a visit to a local Pagoda (temple) as well as the Terra Cotta Warriors Museum near Xi’an. The trip resulted in a meaningful exchange of research activities and the potential for future research collaborations between NWAUFU, XJTU, and UNL. The opportunity to experience the beauty and hospitality of the Chinese culture was certainly a highlight of the trip.

ENERGY RESEARCH

INNOVATIVE MODELS OF TWO KINDS

The Biological Systems Engineering Department has a long history of research and development in renewable energy. Landmarks include development of the Energy Integrated Farm System beginning in 1981 and the many projects led by Milford Hanna on production, processing, and testing of alternate fuels. That foundation has grown into a legacy of innovative research addressing key questions raised by industry and consumers.



Adam Liska, Assistant Professor with a joint position in BSE and Agronomy and Horticulture, coordinates the UNL Energy Science minor. He believes that research is a key component of any student's education, "I have known for a long time how important undergraduate research is for advancing student understanding of how science is applied in real-world settings, and how this research allows them to explore increasingly complex problems."

Through funding from UNL's UCARE program, Liska advised two undergraduate Energy Science minor students in research to prepare them for entry into the graduate programs of their choice. **Casey Heier**, a 2010-2012 UCARE student (B.S. Biological Systems Engineering, May 2013) will pursue his Master's in Atmosphere/Energy in the Dept. of Civil & Environmental Engineering at Stanford University. 2012 UCARE researcher **Celeste Warner** (Environmental Studies, IANR) will go to Indiana University's



Casey Heier

School of Public and Environmental Affairs' Environmental Science, and Environmental Policy and Management program, ranked first nationally.

Heier's research experience focused on issues of bioenergy and fossil fuel sustainability. He collaborated with Liska, his faculty mentor, to publish a peer-reviewed article, "The Limits to Complexity: A Thermodynamic History of Bioenergy," in press in *Biofuels*, *Bioproducts*, and *Biorefining*.

Casey reports, "My research projects gave me the unique opportunity to formulate and refine my own scientific arguments, and ultimately have them critically reviewed and accepted for publication. Going through that learning process as an undergraduate gave me the confidence to apply to some of the most prestigious universities in the world." Warner conducted her research, with UCARE funding in 2012, to complete her senior thesis: "Impact of Vehicle Efficiency Improvements on U.S. Gasoline Consumption and Greenhouse Gas Emissions."



Celeste Warner

This past spring, BSE Extension educator **John Hay** borrowed a Tesla (full electric vehicle) as a demonstration for his energy science class. The Tesla is a tremendous model of a vehicle able to accelerate from a standstill to speed limit in what feels like no time (0-60 mph in 5.5 seconds) while using only one gear. Hay says, "It's like driving a golf cart on steroids (and then some). The cost is mid-\$60k, certainly a lot of money but not too far from being priced for broader adoption in the luxury car market." BSE students get to work with some of the coolest things!



The Tesla full electric vehicle inspected by Energy Science class.

Student Majors in BSE Programs Continue to Rise

The fall 2013 academic year has just started, and it appears that we'll have our largest freshman classes ever! (We don't yet have definitive numbers.) The Introduction to Biological Engineering and Agricultural Engineering AGEN/BSEN 100 course has 104 students, while Introduction to Mechanized Systems Management (MSYM 162) has 21 students. The growth in these enrollment numbers has been steady over the past several years. Our senior level design course (AGEN/ BSEN 470) has 57 students enrolled this fall, which represents about a 70% student retention rate, a measure of success that already meets aspirational goals of the College of Engineering.

We now offer four laboratory sections for the sophomore level AGEN/BSEN 225 Engineering Properties of Biological Materials course; this semester opened up a third laboratory section of the AGEN/BSEN 460 Instrumentation and Controls course.

There are a lot of reasons for the increase in the number of students. Our faculty and staff have made large efforts in student recruiting through summer camps, individual student facility tours, and formal recruiting events. We have a tremendous reputation amongst the students for being truly focused on student success. Last, but certainly not least, is the strong job market and placement for our graduates in careers that meet their expectations.

It is a great time to be in our field and that is reflected in the tremendous growth of our academic programs in Agricultural Engineering, Biological Systems Engineering, and Mechanized Systems Management.



Dr. Santosh Pitla

Dr. Santosh Pitla is joining the BSE faculty Oct. 1 as Assistant Professor in Advanced Machinery Systems. He is completing his work as a post doctoral scholar at The Ohio State University after receiving his Ph.D. from the University of Kentucky. Santosh is an excellent addition to our faculty.



Dr. Jennifer Melander

Dr. Jennifer Melander moved into a tenure track faculty role as science literacy specialist Aug. 1. This position is one of the working group hires in IANR and will focus on providing statewide programming in science literacy and educational programs on food, fuel, water, landscapes, and people. Jenny's administrative home will be BSE, but she will work with individuals throughout IANR, UNL, and the state.



Dr. Yufeng Ge

Dr. Yufeng Ge will join UNL as a faculty member in Advanced Sensing Systems to begin on Jan. 1, 2014. His position is based in BSE, and he will partner with faculty in A&H and SNR programs. He will develop and teach a new course in sensing specifically for students in A&H and SNR programs. Dr. Ge is an excellent addition to our faculty.



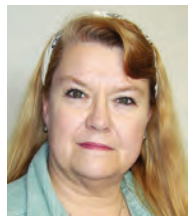
Andrea Spader

Andrea Spader joined BSE May 20 as advising and recruiting coordinator. Her B.A. is in International Studies from UNO. She studied at the American Institute of Indian Studies in Jaipur and at Hyderabad Central University while working on her B.A.; Andrea was selected as the ideal fit for BSE, with great experience in student services and a strong student-centered perspective.



Austin Lammers

Austin Lammers received his BSE degree in Agricultural Engineering in 2005 and returned to the Nebraska Tractor Test Lab (NTTL) Feb. 2009 as a Test Engineer. His family is relocating to Ames, Iowa, where he will be a consulting engineer at Curry-Wille & Associates. His main focus has been modifying NTTL testing hardware and software to improve data quality, reduce testing time, and improve the overall test experience.



Ella Carson

Ella Carson has moved on to new horizons, leaving BSE in June, where she had been Accounting Associate since 2006. Ella received a huge outpouring of well-wishes from the Department on her departure.



Sohan Birla

Sohan Birla has accepted a position at ConAgra as Senior Research Scientist. Sohan worked with the food and bioprocess engineering efforts of BSE for the past five years.

The **Holling Family Master Teacher Award/UNL** University-wide Teaching Award was awarded to **Curtis Weller**, Professor, Biological Systems Engineering. He also earned a 2013 UNL College of Engineering Award for Distinguished Teaching.

Paul Jasa received the 2013 Nebraska Soil and Water Conservation Society Honor Award at the chapter's annual meeting awards banquet. The award honors outstanding leadership in the facilitation, information, and education of No-Till and Cover Cropping Systems, No-Till Equipment and Tillage Systems Evaluations. His work has contributed significantly in the systems approach to improving natural resources and long term benefits of soil health.

Milford A. Hanna, professor emeritus of BSE and Kenneth E. Morrison Distinguished Professor (1990-2011) was named as a new member of the Nebraska Hall of Agricultural Achievement. He most recently served as interim head of the Department. Hanna's primary research emphases have been extrusion process engineering, biofuels, biopolymers, and biomaterials. The 2008 ScienceWatch reported Hanna ranked No. 1 by total citations in biofuel research for the decade. He has about 350 peer-reviewed publications and holds five patents. Among his awards are being named a Fellow in the American Society of Agricultural and Biological Engineers (1996) and Engineer of the Year for the Nebraska section of ASAE (1991).

Dr. Deepak Keshwani will serve another term on the CASNR Faculty Advisory Council representing Biological Systems Engineering. His two-year term begins July 1, 2013 and ends June 30, 2015. The FAC Planning and Transition Meeting will be held on August 20. Deepak served as Chair of the Council this past year.

Dr. Tami Brown-Brandl and **Dr. Deepak Keshwani** were both awarded 2013 ASABE Presidential Citations. The President's citations recognize those who have contributed exceptional service to the profession and the Society. Dr. Keshwani received this award for his role as a member of the Path Forward Committee. This committee was appointed by ASABE to refine and finalize a new organizational structure for the Society and to develop a process to implement the new structure. Dr. Tami Brown-Brandl was awarded the Citation for her exceptional service to the profession and the Society.

Jack Schinstock retired from the faculty June 30, 2013 but will stay on as an Emeritus faculty member. He will continue teaching MSYM 245 class this fall, advising students, and working in the CASNR dean's office for the semester. Jack's impact on our academics, the MSYM program in particular, and our tremendous growth cannot be overstated. When Jack finally does finish his role at the UNL, he will be sorely missed.

Enhancing Bioprocess Research

Suat Irmak was appointed as the Harold W. Eberhard Professor of Agriculture.

Jeyam Subbiah was appointed the Kenneth E. Morrison Professor of Food Engineering.

Angela Pannier received the Dinsdale Family Faculty Award and was promoted to Associate Professor with tenure.

Kurt Preston has been appointed for three years to the Chief of Engineers Environmental Advisory Board for the U.S. Army Corps of Engineers, which manages one of the largest federal environmental missions: restores ecosystems; constructs sustainable facilities; regulates waterways; manages natural resources; and cleans up contaminated sites from military activities. Preston joined UNL in 2012 as associate vice chancellor for research and BSE professor. His B.S. is in agriculture from the University of Georgia, M.S. and Ph.D. are in civil engineering from Purdue, and J.D. from North Carolina Central University.

Dr. Deepak Keshwani was the recipient of an equipment grant, which is being used to purchase a “SegFLOW Flownamics” automated sampling and control system. The equipment will enhance the bioprocessing research infrastructure in the BSE Department. The system will link bioreactors to analytical equipment, enabling continuous monitoring and feedback control for efficient and reliable analysis of bioprocesses, particularly in the area of biofuels and food safety. Biological processes in these areas of research, involving enzymatic and microbial systems, are inherently complex and dynamic in nature. These processes require continuous monitoring of process parameters and tracking responses to changes in reaction and environmental conditions.

An immediate use of the system will be in Dr. Keshwani’s current research project on optimizing the process of producing ethanol from agricultural residues such as corn stover. Other applications will include supporting Dr. Subbiah’s research in the area of food safety.

BSE is fortunate to have faculty researchers, like Keshwani, who bring funding to the Department and pursue projects that place us at the forefront of global research agendas, while allowing students to gain experience in the laboratory.

Dr. Kocher Returns from Year at BastLab

Mike Kocher returned from an IANR faculty development leave (June, 2012-May, 2013) working with BastLab, LLC, an early-stage company in Omaha, to develop equipment and facilities for the initial post-harvest processing of bast fiber crops. Bast crops can be processed into fiber products for use in products ranging from non-woven mats to high-strength, light-weight composites. Bast crops include flax, jute, kenaf, and industrial hemp.

The plant stalks have an outer ring composed mostly of long, strong, bast fibers, while the inner core is a woody material. The biggest challenge to industry growth is lack of effective equipment to decorticate the stalks (separate fiber from the core). BastLab had developed and tested a bench-top prototype with very promising results. Mike developed a mathematical model describing the kinematic behavior of the prototype and used it to evaluate more than 100 configurations of the design and recommend a final configuration for fabrication and testing. He also reviewed SolidWorks models of the design and was the primary contact with companies that bid on construction of the design.

Kocher also developed initial designs for other equipment to go in the processing line and wrote specifications for the instrumentation to go in BastLab’s new Omaha R&D center. He wrote the initial drafts of the technical portions of a successful application BastLab submitted for a R&D grant from the Nebraska Department of Economic Development. As timing did not permit him to set up the R&D center, BastLab negotiated with UNL to share Kocher with BastLab (60% UNL, 40% BastLab) through December, 2013.

ASABE 2013 Educational Aids Blue Ribbon Winners

Electronic & Web-based Delivery

Richard Stowell, Dennis Schulte, et al, *Air Quality in Animal Agriculture eXtension website*. <http://www/extension.org/pages/15538/air-quality-in-animal-agriculture>

Short Publications

Suat Irmak, Chuck Burr, *Evaluation of Water Productivity and Irrigation Efficiency in Nebraska Corn Production*.



Lester F. Larsen Tractor Test & Power Museum Homecoming Open House

The UNL Tractor Restoration Club will host an open house at the Larsen Tractor Test & Power Museum on Thurs., Oct. 3, 5–7pm, prior to the East Campus Homecoming Concert. Free food and drinks will be provided at the Museum; the club is taking free-will donations to fund their current restoration project: a John Deere H. The students have begun restoration on this nifty little tractor and need funds for new tires, paint, and parts to complete the project by May 2014.

After your visit to the Museum, venture across the street for the 2013 Homecoming Concert, featuring country star Craig Morgan, at 8pm. Bring the whole family out for a night at the Museum and free entertainment on UNL’s East Campus! For more information about the Larsen Open House, contact Museum Manager Lance Todd at 402-472-8389 or ltodd6@unl.edu.

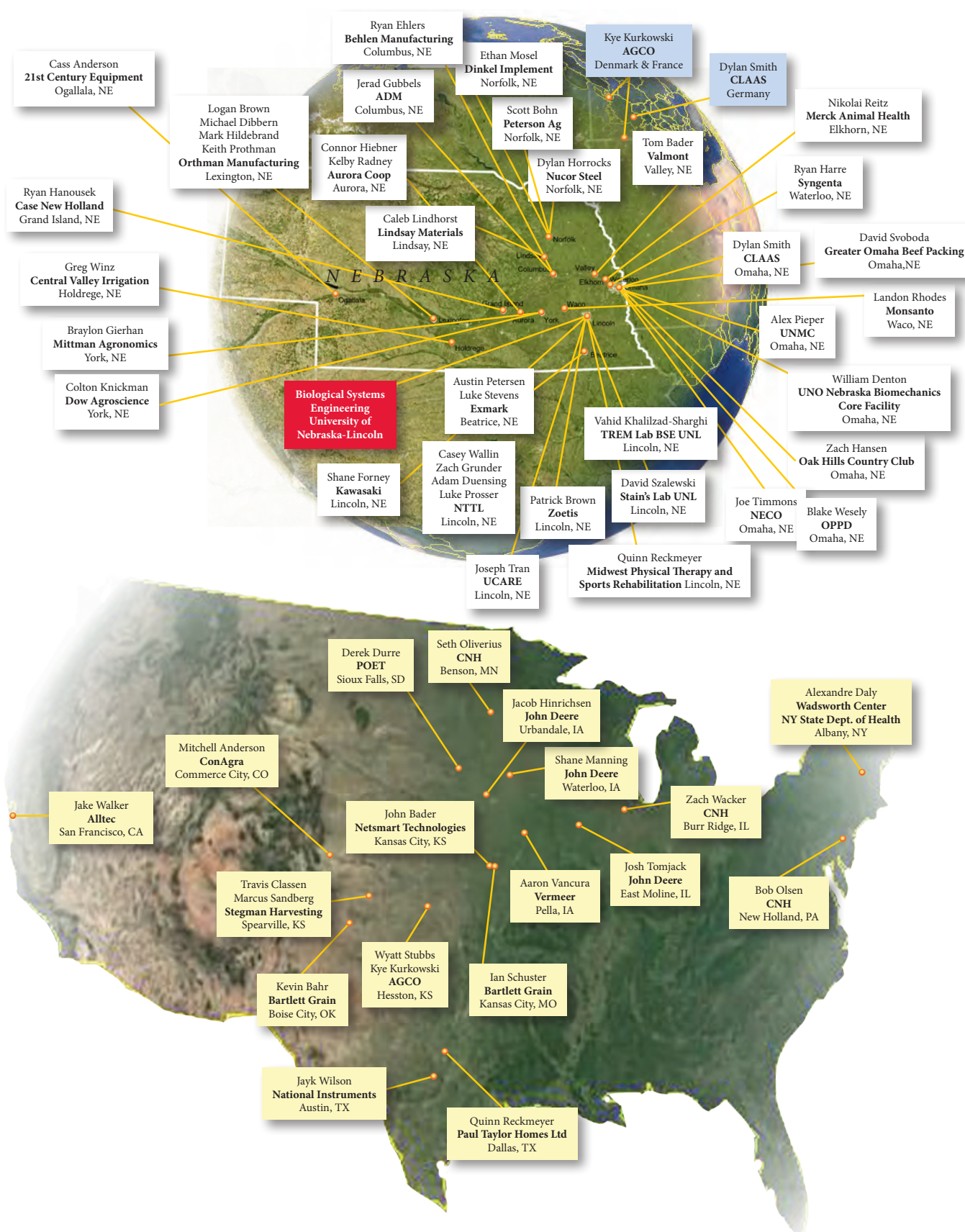


Get your Museum T-Shirts

New lightweight T-shirts at Larsen: sizes Sm-XL, \$15, with the Museum logo front and UNL “N” on back.

Intern Travels

BSE students intern with business and industry across Nebraska, the U.S., and the world.



UNL Student Tours Europe with CLAAS

Dylan Smith (senior, AGEN) was one of thirty students across the U.S. who were awarded CLAAS of America sponsorships to attend the Agricultural Equipment Technology Conference (AETC) held January 2013, with the Ag Connect Expo, Kansas City. Students were selected based on a number of qualifications, including essay responses to the question, “What do you feel has been the greatest contribution CLAAS has made to the world agricultural industry?” Based on his winning essay, Dylan was also chosen to receive an all-expense-paid trip to Germany.

Dylan is from Eddyville, NE and worked as a ranch hand during summers; he learned to manage irrigation systems, and acquired a broad background in machinery maintenance and operation. He is an active ASABE student member. “The student branch at UNL gets together monthly,” Smith said, “and the meeting agenda is usually full—from the 1/4-scale tractor competition to chapter trips, as well as the fundraising necessary to make these things happen, which includes everything from lawnmower clinics to concession stands. Being an ASABE student member makes for a great study break, provides involvement with peers and friends, and membership looks good on a resume, too!”



claasofamerica.com

He learned about the AETC/Ag Connect sponsorships at an ASABE student meeting. “The Kansas City trip was terrific,” he said. “Among other things, I got to sit in on Standards meetings, and I was wowed by seeing the ASABE professionals at work.” He traveled to Germany with CLAAS over spring break in March.

While the trip focused on CLAAS facilities, Dylan’s European tour also included sightseeing trips to Amsterdam and Berlin. He found time to pursue his interests in machinery by test-driving CLAAS Xerion and Arion tractors at the CLAAS test farm.

Dylan is now two months at CLAAS doing an internship/coop experience working with test machinery. “It’s new, top-secret stuff,” he said with a grin. “I’m chasing harvesters for six months all around the county! And this experience is solidifying what I think I want as a career in agricultural engineering. It’s better than the classroom at this point. I can see if I’m right about my life goals and put my education into action.”

UCARE Students Work with Unmanned Aircraft Systems

Matthew Hedrick and **Tim Kinoshita**, BSE students in the UCARE research program, worked with **Dr. Wayne Woldt** and **Dr. George Meyer** to conduct research on the application of unmanned aircraft systems (UAS) for agriculture purposes. They focused on flight laboratory development and education.

NASA has opened national airspace to UAS’s and new applications are being considered. This study focused on UAS applications for the farming industry. UAS’s equipped with sensors and cameras allow farmers to monitor crop health more effectively and to identify potential problems and address them sooner, resulting in higher crop yields.

A course outline was prototyped and tested to teach students how to fly and use UAS’s and attain flight proficiency after 15 laboratory sessions. Aircraft, controllers, and computer programs were selected based on pricing, durability, and size, including fixed-wing and quadcopter. Indoor flight labs and flight testing, and outdoor flight labs were held mainly at Lancaster Event Center.



From left: Matt Hedrick (BSEN), Dr. Wayne Woldt, and Dr. George Meyer

Student News



Extension Engineer Paul Jasa develops and conducts educational programs related to crop production, soil health, and the environment. He has been to Canada, Ukraine, Turkey, China (above), Brazil, and Mexico to share his no-till knowledge. Paul hosted visitors from around the world at the Department's Rogers Memorial Farm to show no-till in the field and demonstrate planting equipment; and made Extension presentations in half of the U.S., representing Nebraska and the work that UNL has done with no-till.

No-Till Around the World by Paul Jasa

When I started my M.S. in 1978, I focused on evaluating planting equipment in different tillage systems. I soon learned that it takes a systems approach for successful no-till; I had to become knowledgeable about crops, soils, pest management, and other topics not covered in the engineering program. I stress the systems approach in my presentations and appreciate that we now have Biological Systems Engineering and Mechanized Systems Management. In my international travels, I've learned that cultural differences change the crop production "system" that is familiar in the U.S.

Most notably was the value that was placed on previous crop residue. Left in the field, it protects soil from rain impact, reduces erosion and crusting, and builds healthier soils. But in China, I saw all of the residue removed for livestock feed; even rootballs were picked up to be burned for cooking. The demonstration farm there erected a 10' fence to keep out villagers. In Ukraine, a villager loaded his wheelbarrow with residue at the far end of the field while I presented an equipment demonstration. In Turkey, residue was harvested as animal feed, and what wasn't removed was burned off.

I worked with a Ukrainian group founded by former KGB officers. Their operation was quasi-military, with a chain of command and orders to be followed, which was familiar to the workers since Soviet collective farms operated similarly. When I asked for a wrench to make an adjustment for a seeder demo, the tractor operator asked the mechanic who asked the tool room attendant. In China, the agronomist wanted advice on an alfalfa stand. We waited for his driver and a field worker to go to the field. The worker dug up a plant to hand the agronomist, who asked me to take a look at it. Demonstrating no-till at a Chinese field day for university and government officials, I dropped to my knees to dig up some seeds to show how well the planter was performing. The crowd gasped as "people in my position" don't touch the soil or the equipment; I surprised them by asking if there were any questions.

Many event attendees want a "recipe" of what to do and when, or they want to know exactly what equipment or inputs to buy. I prefer to teach the basics of why and give information so that they can make informed decisions to best fit their situation and conditions. I have to remind myself to consider the culture and needs as I develop presentations. It is all part of the systems approach.

Lauren Wondra (senior BSEN) is working on a project with Dr. Jones and Dr. Bashford through the Biomedical Imaging and Biosignal Analysis (BIBA) Laboratory. Her research consists of working with the USDA's Meat and Animal Research Center on analyzing data points taken on the physiological traits of cows. These traits are effects of environmental factors such as solar, temperature, humidity, provided shade, etc. "I then use MATLAB to analyze the data given and find a threshold where data goes from just being data to serious danger," explains Lauren. The key with finding the threshold is then being able to determine what the factor is that is causing a threat to the cows, information then provided to farmers and feedlot managers as a personalized plan. Aside from her research, Lauren is working on structuring an online physics class, as well as being a Teaching Assistant for BSEN 212A.

Junior **Aaron Matzke** was awarded 3rd place in the K. K. Barnes Student Paper Awards Competition. This competition is to encourage undergraduate students in the preparation of better technical papers. The competition consists of a written competition and an oral competition. Only the top three papers were invited to attend the Annual Meeting. Aaron wrote his paper on computer modeling of microwave heating in a multi-component food product.

David Svaboda's summer internship at Greater Omaha Beef Packing plant has been extended into the fall semester. He is an undergrad student with Dr. Subbiah.

Chao Tai, a graduate student in BSEN, received the 2013 Bill A. and Rita L. Stout Outstanding International Graduate Student Award.

Emily Hubl, a UNL junior from Lawrence majoring in biological systems and engineering, received a Jack Miller Scholarship. A member of the Scarlet Guard Board of Directors, she has also been active in the Professional Society of Engineers, Engineers without Borders and the CASNR Leadership Council. She studied engineering in Italy in 2011 and was a member of the NASA Microgravity University Team at UNL from 2011-2012. Hubl is a student researcher at the USDA ARS Durso Laboratory and a fellowship intern at the Nebraska Center for Materials and Nanoscience.



News-Register/Nick Benes

Maggie Clay, (shown center) worked with **Dr. Jennifer Melander** this summer at the Edgerton Explorit Center in Aurora, NE. The Edgerton Explorit Center is an interactive children's museum where kids learn about

science concepts through hands-on activities. Maggie developed and implemented programming for Mad Science Mondays. Approximately 20 students, ages 8–12, attended the activities each week. Maggie prepared 8 sets of themed activities. The students enjoyed a variety of activities from making bouncy balls during the chemistry lesson to testing paper airplanes during the space and flight lesson.

Student News

Quarter Scale X-Team Places 2nd

This year the Quarter-Scale Tractor X-Team took 2nd place in the ASABE International 1/4 Scale Tractor Student Design Competition. Students gain practical experience in the design of drive train systems, tractor performance, manufacturing processes, analysis of tractive forces, weight transfer, and strength of materials. In addition, they develop skills in communication, leadership, teamwork, fundraising, and test and development. The Competition is unique among student engineering-design contests in that it provides a realistic 360-degree workplace experience. Teams of students are given a 31 hp Briggs & Stratton engine and a set of Titan tires. The design of their tractor is up to them. Industry experts judge each design for innovation, manufacturability, serviceability, maneuverability, safety, sound level, and ergonomics. Teams submit a written design report in advance and on-site they must sell their design in a formal presentation. Machines are put to the performance test in four tractor pulls and a maneuverability course. The X-Team improved the previous year's tractor, which had received 7th place as an A-Team entry in 2012. The 2013 A-Team took 12th place.



X-Team, from left: Dr. Roger Hoy, Director Nebraska Tractor Test Laboratory, Micah Bolin, Robert Olsen, Ethan Mosel, and Dr. Joe Luck.



A-Team, from left: Dr. Roger Hoy, Bob Olsen, Ethan Mosel, Austin Zimmerman, Micah Bolin, Zach Wacker, Kye Kurkowski, Joe Timmons, Austin Peterson, Noel Menard, Aaron Vancura, Keith Prothman, Reed Lund, Brett Cross, Dr. Luck.



Left to right: Levi Schlick and Jason Jahnke flip burgers as Corbin Fagen watches.

Welcome Back BBQ

Organized by Mech Systems and ASABE student clubs, the 2nd Annual Welcome Back BBQ drew over 100 people. AGR fraternity provided the grill.



From left: Julia Alves, advisors Dr. Dean Eisenhower, Dr. Derek Heeren, and David Mabie, Lauren Wondra, Bethany Brittenham, (advisor) Alan Boldt, Noel Menard, Hillary Stoll, Julia Burchell.

Fountain Wars

The G. B. Gunlogson Fountain Wars is a national competition conducted through the American Society of Agricultural and Biological Engineers. Each year teams are faced with two technical tasks, along with taking part in an aesthetic display during the competition. The theme decided by the team for 2013 was "Duck Dynasty."

The UNL team placed 5th overall at this year's national conference. The captains of the team were seniors Lauren Wondra, Adam Emanuel, and Sarah Gardels. In the first technical task, the team received 5th place, and in the second technical task, 4th place.

Become Involved. Next year's competition will be held in Montreal, Canada from July 13-16, 2014. If you would like to become a part of the team, please contact the team's advisor, Dr. Heeren at derek.heeren@unl.edu, or ASABE's president at UNL, Lauren Wondra at lewondra@gmail.com. All majors are welcome to join.



Brian Magnusson (AGEN 2001) lives in Chicago, and works at CNH as the global product portfolio manager for their line of agricultural tractors sold under the Case IH, New Holland, and Steyr brands. He is responsible for the product line growth strategy and management of the multiple brands' product offering in approximately 170 countries worldwide. Prior to joining CNH, he spent four years with the management consulting firm Bain & Company in their Chicago office, where he worked for several leading global companies in the industrial manufacturing, aerospace and defense, financial services, retail and health care industries. He previously worked in project management in the energy industry while at Burns & McDonnell, an engineering and construction services firm based in Kansas City, MO.

Brian participated in the study abroad program at Oxford University during the summer of 2000. In 2008, he received his MBA degree from the Harvard Business School in Boston. Magnusson serves as a board member for the Creating Captions Foundation, a non-profit youth leadership program, designed to inspire young student athletes to live a life of character both on and off the playing field.

Jonathan Morse received a Doctor of Philosophy, Electrical and Electronics Engineering from Massachusetts Institute of Technology. Jonathan received his M.S., Engineering (1999–2005) from BSE, University of Nebraska-Lincoln.

Early Achiever Award

Jess Sweley is senior director of research, quality and innovation at ConAgra Foods in Omaha. He leads a team of 30+ scientists, engineers and culinologists responsible for new product and technology development. He earned a bachelor's in Biological Systems Engineering from UNL in 1999 and a Ph.D. in Food Science and Technology in 2012.



Dr. Girish Ganjyal accepted the position of Assistant Professor and Extension Specialist at the School of Food Science, Washington State University in February 2013. Previously, Dr. Ganjyal has worked as Principal Engineer for PepsiCo in Plano, TX for four years and as Principal Scientist for MGP Ingredients Inc. in Atchinson, KS for five years. Dr. Ganjyal received his Ph.D. from BSE in 2004 under the guidance of **Dr. Milford Hanna**. He can be contacted at (509)335-5613 or girish.ganjyal@wsu.edu.



Austin Lammers is leaving his test engineer position at Nebraska Tractor Test Lab. His wife, Bailey, is in the UNL/ISU veterinary medicine program. They will relocate to Ames, IA to finish her program. He looks forward to gaining industry design experience as a consulting engineer at Curry-Wille & Associates. Austin says, "Thanks to our director and talented new staff, I have been able to meet my goals and help put the Tractor Testing Lab on a progressive track. NTTL will no doubt continue to play an invaluable role in agricultural industry. Thanks to all I have worked with at UNL for making my experience here unforgettable!"



David City native **Ernest Haight** was a 1924 graduate of UNL who majored in Agricultural Engineering and earned an additional degree in Arts & Sciences, where he was Phi Beta Kappa. Haight farmed his family's land and became a prolific hobby quilter, producing more than 300 quilts until the 1980's. His mathematical approaches generated fascinating designs, and his focus on efficiency in production made him a resource to many quilters. An exhibit runs through March 2014 at the Quilt Museum on East Campus; it is free to faculty, staff, and students with UNL id. To learn more: http://www.quiltstudy.org/exhibitions/online_exhibitions/eh/

NEW STUDENT ENROLLMENT

Biological Systems Engineering continues to be well represented at UNL's New Student Enrollment (NSE). It is crucial to show students from day one that they are an important investment for our faculty and staff. Veteran first-year student advisors **Drs. Jones, Schinstock, Schulte, and Weller** are responsible for creating this high expectation over the years within BSE. Not only is the NSE experience a student's first concrete step towards obtaining their degree, but often is the first time they rely on someone other than their parents to guide them through a major life change.

During NSE, students are advised one-on-one about their interests and passions. They discuss the classes that they will enroll in and any questions or concerns they have about their choice to pursue a degree within BSE. Advisors typically meet with parents to visit over lunch, where their concerns can be addressed and they can chat with other parents of freshmen entering the College of Engineering (COE) or College of

Agricultural Sciences and Natural Resources (CASNR). Time has a way of catching up with all of us, and it is very "telling" when veteran advisors meet alumni/parents of second generation AGEN, BSEN, or MSYM freshman at lunch!

But things are constantly changing at NSE. Gone are the long lines, punch cards, drop/add forms, printed lists of courses, phone registrations, that alums may remember. In their place are on-line registration (called MyRed) and book orders, skits, campus life sessions, and tours. This year, **Evan Curtis** and **Andrea Spader**, advised incoming BSEN and AGEN students with the help of **Dr. Schulte** and alums **David Mabie** (B.S. BSEN '08, M.S. ENVE '11) and **Abby Kelly** (B.S. BSEN '11). **Dr. Jones** is now the new Associate Dean of Engineering and was responsible for the overall COE/NSE operation. **Dr. Schinstock** again coordinated the CASNR/MSYM NSE effort. It is a constant that the faculty and staff that participate in NSE thoroughly enjoy the process and the interaction with incoming freshman and transfer students. As alums know so well, not one student will take the exact same path to graduation, and time taken in the beginning to figure out which direction the student should go is incredibly valuable for the student and the Department.

MAY 2013 GRADUATION

Biological Systems Engineering

Craig Beck
Dana Becker
Jacob Campbell
Joseph Dougherty *University Honors Program*
Elizabeth Dudley
Sarah Gardels
Casey Heier
Amanda Hlavac-Baker
Bradley Hugenroth *With Distinction*
Monica Krause *With Distinction & University Honors Program*
Olivia Lambdin *University Honors Program*
Andrick Maganga
Jeremiah Meints
Jackson Miller
Daniel Reiff *With Distinction*
Katelyn Stanley
Taylor Wiese
Gill Wright IV

Agricultural Engineering

Adam Emanuel *With Distinction*
David Lindquist
Noel Menard
Christopher Reimers
Austin Zimmerman

Mechanized Systems Management

Aaron Blase
Derek Dam
Matthew Drudik
Adam Gilligan
Colton Hahn
Andrew Heller
Dylan Mayberry
James Roeber
Wyatt Smith
Timothy Trumble
Kalby Wehrbein

AUGUST 2013 GRADUATION

Mechanized Systems Management

Blake Deiber
Timothy Steinhraus

THE DEAN'S LIST *Spring Semester 2013*

* indicates 4.0 gpa

BSEN

Ellie Ahlquist*
Paula Andrie
Tara Asgarpoor*
John Bader
Brian Barnes
Dana Becker*
Jared Beyersdorf
Chase Blazek*
Tasneem Bouzid
David Bunker
Julia Burchell
Brian Burris
Jacob Campbell
Erica Carder
Brinson Chapp*
Kathryn Conroy*
Aaron Cronican*
Christopher Davidson*
William Denton
Joseph Dougherty
Drew Dudley*
Elizabeth Dudley
Katherine Dudley
Zachary Duncan
Collin Erickson
Skylar Falter
Eric Farris*
Nicholas Gerken
Kari Heck
Matthew Hedrick
Charles Hinds
Richard Horrocks
Cody Houdesheldt

Emily Hubl
Bradley Hugenroth
Benjamin Joekel
Hayden Kaderly
Kathleen Kendall
Emily Klimisch
Ted Kocher
Monica Krause
Larissa Krenk*
Olivia Lambdin
Rachel Lemke*
Natalie Lenners
Brenden Lopp
Megan Lush
Mitchell Maguire*
Nathaniel Mannebach
Amy Mantz
David Marshall
Aaron Matzke
Marissa McCormick
Linkai Mei
Keith Miller
Mackenzie Miller
Michael Moeller
Erik Moore*
Rachel Morford
Mallory Morton
Samantha Nelson
Cat Nguyen
Sheridan Nusz
Emily Olig
Jared Ostdiek*
Keith Ozanne
Ian Parsley*

Nicholas Phillips
Alexander Pieper*
Kevin Real*
Kevan Reardon
Quinton Reckmeyer
Daniel Reiff*
Nikolai Reitz
Justin Rosenbohm*
Lukas Samuelson*
Kara Scheel
Nicole Schuster
Alexander Sellers
Alena Senik
Cole Sievers
James Sinclair
Jacob Sison-Martinez*
Riley Smith
Katherine Smith*
Hillary Stoll*
Christopher Sullivan
David Svoboda
Halle Swann
David Szalewski
Jared Thomsen*
Nhat Tran
Samantha Triba
Alex Van Lent
Elizabeth Varberg
Kyle VerMaas
Joseph Wahlmeier*
Sophie Walsh
Katelyn Watts
Mitchell White
Megan White*

Taylor Wiese
James Yong

AGEN

Rafael Granja
Noel Menard
Adam Frerichs
Mark Hilderbrand*
Philip Hochstetler
Kye Kurkowski
Tyler Manning
Shane Manning
Joshua Meyer
Robert Olsen
Luke Prosser
Keith Prothman
Christopher Reimers
Dylan Smith
Anna Sorensen
Wyatt Stubbs*
Joseph Timmons*
Joshua Tomjack
Zachary Wacker

MSYM

Scott Bohn
Matthew Favinger
Timothy Frey
Benjamin Halvorson
Jarod Ketter
Kerry McPheeters
Cameron Popp

2013-2014 SCHOLARSHIPS AWARDED

| | |
|--|---|
| Warren P. Person Memorial | Nicholas Gerken (BSEN) |
| George Milo Petersen | Jacob Harms (AGEN) |
| Paul E. and Mary Beth Fischbach and Family | Kelby Radney (MSYM) Lisa Marie Gran (BSEN) |
| Mr. and Mrs. W.F. Hoppe, Sr. Memorial | Aaron Shropshire (MSYM) |
| John Sulek Memorial | Levi Schlick (MSYM) |
| Fred R. Nohavec | Lauren Wondra (BSEN) |
| Edgar Rogers Memorial | Travis Classen (MSYM) Derek Durre (MSYM) |
| Central Plains Irrigation Association | Anna Sorensen (AGEN) |
| Elenore Gakemeier Swarts | John Bader (BSEN) Skylar Falter (BSEN) Kathryn Conroy (BSEN) |
| Lloyd W. And Margaret V. Hurlbut Memorial | Zach Grunder (AGEN) Jake Walker (AGEN) |
| Case New Holland | Aaron Vancura (AGEN) Joesph Timmons (AGEN) Robert Olsen (AGEN) Mitch Herbig (MSYM) |
| AGP Biological Systems Engineering Student | Aaron Matzke (BSEN) Kevin Bahr (MSYM) |
| Glen D. Chambers | Julia Burchell (BSEN) Bethany Brittenham (BSEN) |
| John Deere | Colton Knickman (MSYM) Adam Frerichs (AGEN) Lucas Allen (MSYM) Zachary Wacker (AGEN) Greg Frenzel (MSYM) |
| Leroy W. and Jeane E. Thom | Shane Manning (AGEN) Mark Hilderbrand (AGEN) Wyatt Stubbs (AGEN) Jacob Hinrichsen (MSYM) Scott Bohn (MSYM) Caleb Lindhorst (AGEN) Nicholas Herbig (MSYM) Thomas Bader (AGEN) Gregory Winz (MSYM) Matthew Erickson (MSYM) |
| Ivan D. Wood Memorial | Zach Hansen (MSYM) Mitchel Anderson (MSYM) Ben Halvorson (MSYM) |
| Ken Von Barga Student Support | Jared Werner (MSYM) |
| Dr. and Mrs. William E. Splinter | Luke Monohollon (BSEN) Courtney Kinser (BSEN) Turner Hagen (AGEN) Bennett Turner (AGEN) |
| Tom Thompson Memorial | Latham Fullner (MSYM) |
| Leonard G. Schoenleber | Hillary Stoll (BSEN) |
| Wayne E. and Virginia R. Thurman | Kye Kurkowski (MSYM) Riley Shea Smith (BSEN) Nicole Schuster (BSEN) Joshua Tomjack (AGEN) |
| Glenn J. and Maria L. Hoffman | Jameela Pedersen (BSEN) |

The next generation of BSE students could use your help. Your generous donations support student scholarships and special opportunities, as well as equipment for classrooms and laboratories. Please consider making a donation to the Biological Systems Engineering Excellence Fund to provide student programs and scholarships. If you prefer, you can establish your own fund and name it for a family member, friend or mentor.

To arrange a gift, contact:

Josh Egley, (CASNR/MSYM)

402-458-1202

jegley@nufoundation.org

OR

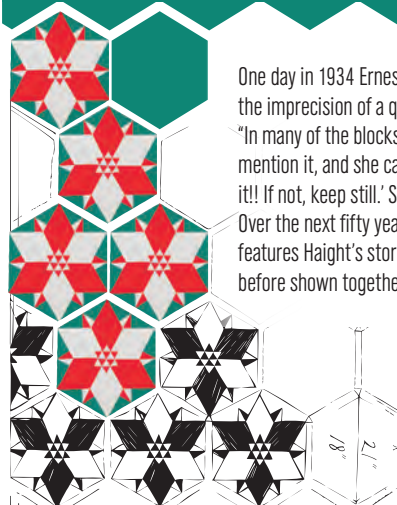
Karen Moellering (COE, AGEN/BSEN)

402-458-1179

kmoellering@nufoundation.org

The Engineer Who Could Ernest Haight's Half Century of Quiltmaking

Lois Gottsch Gallery • On display now through March 2, 2014



One day in 1934 Ernest B. Haight couldn't keep his mouth shut. He noticed the imprecision of a quilt his wife, Isabelle Hooper Haight, was working on. "In many of the blocks, the corners of the pieces didn't fit too well. I had to mention it, and she came right back with, 'Well, if you can do better, prove it!! If not, keep still.' Soooooo - What else could I do?"

Over the next fifty years he made more than 300 quilts! The exhibition features Haight's story and some of his most remarkable quilts, never before shown together.

RELATED PROGRAMMING

Visit <http://www.quiltstudy.org/visit/calendar.html> to view more events.

February 7, 2014, 5:30 p.m.

Public Lecture, "The Importance of Being Ernest," by Jonathan Gregory, Exhibition Curator

**See Alumn News
page 14**



International Quilt Study Center & Museum
1523 N. 33rd Street
Lincoln, NE 68503

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